

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**





Office de la Propriété  
Intellectuelle  
du Canada

Un organisme  
d'Industrie Canada

Canadian  
Intellectual Property  
Office

An agency of  
Industry Canada

CA 2026495 C 2001/10/30

(11)(21) **2 026 495**

(12) **BREVET CANADIEN  
CANADIAN PATENT**

(13) **C**

(22) Date de dépôt/Filing Date: 1990/09/28

(41) Mise à la disp. pub./Open to Public Insp.: 1991/04/06

(45) Date de délivrance/Issue Date: 2001/10/30

(30) Priorité/Priority: 1989/10/05 (1-261837) JP

(51) Cl.Int.<sup>5</sup>/Int.Cl.<sup>5</sup> A61F 13/15

(72) Inventeurs/Inventors:

Suekane, Makoto, JP;  
Yamamoto, Hiroki, JP;  
Yamamoto, Masamitsu, JP;  
Fujioka, Yoshihisa, JP;  
Kimura, Noriyuki, JP

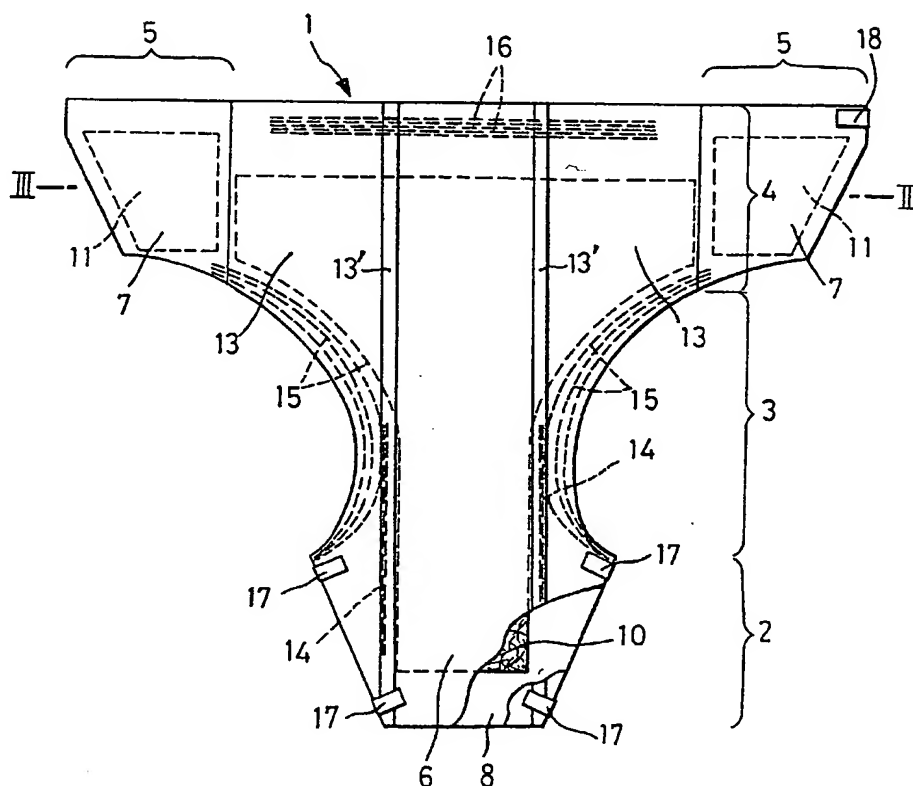
(73) Propriétaire/Owner:

UNI-CHARM CORPORATION, JP

(74) Agent: SWABEY OGILVY RENAULT

(54) Titre : COUCHES JETABLES POUR BEBES

(54) Title: DISPOSABLE DIAPERS



(57) Abrégé/Abstract:

Here is disclosed a disposable diaper having a front area, a crotch area, a back area and a pair of liquid permeable wing areas laterally extending from opposite sides of said back area so that said diaper may be worn by fastening said wing areas to each other, then placing said front area upon these wing areas and fastening said front area to said wing areas.

Canada

<http://opic.gc.ca> · Ottawa-Hull K1A 0C9 · <http://cipo.gc.ca>

OPIC · CIPQ 191

OPIC



CIPQ

## A B S T R A C T

Here is disclosed a disposable diaper having a front area, a crotch area, a back area and a pair of liquid permeable wing areas laterally extending from opposite sides of said back area so that said diaper may be worn by fastening said wing areas to each other, then placing said front area upon these wing areas and fastening said front area to said wing areas.

## DISPOSABLE DIAPERS

## BACKGROUND OF THE INVENTION

This invention relates to disposable diapers adapted to receive excretions and more particularly to such disposable diapers suitable for adult users.

Most of conventionally available diapers for adult users is characterized in its substantially T-shaped configuration as a whole defined by a back area and a pair of wing areas laterally extending from opposite sides of the back area.

Diapers of such configuration are generally classified into two types concerning the sequence for wearing them when the wearer is in bed.

With the first type, an attendant places a back area of a diaper on the rear waist of the wearer, places a crotch area thereof on the crotch of the wearer with a front area thereof being held in hand, places said front area on the belly of the wearer and finally places and fastens said wing areas one on another over the belly of the wearer. Most of conventional diapers are of this first type so far as the sequence for wearing is concerned.

With the second type, the attendant places a back area of a diaper on the rear waist of the wearer, fastens wing areas thereof one on another over the belly of the wearer,

places a crotch area thereof on the crotch of the wearer with a front area thereof held in hand, places said front area on the belly of the wearer so as to cover said wing areas and finally fastens said front area onto said wing areas.

Concerning the ease for diaper to be worn, the latter is better than the former, because, with the latter type, the diaper is fastened around the waist of the wearer at the intermediate step of wearing by coupling said wing areas to one another over the belly of the wearer and the diaper can be worn by the wearer him- or herself who stands up.

With the latter type, however, an absorbent core located in said front area would not be effectively utilized for absorption of liquid excretions since a liquid-impermeable backsheet extends the entire diaper including said wing areas. Specifically, said front area is placed upon said wing areas having the liquid-impermeable backsheet and these wing areas form a barrier against permeation of liquid excretions into said front area. When said front area is not effectively utilized for absorption of liquid excretions in this manner, a liquid absorption capacity in said front area will be insufficient to avoid undesirable leakage of liquid excretions, particularly when the wearer is adult. Leakage due to such insufficient liquid absorption capacity in said front area often occurs

particularly when the wearer is male or when the wearer is female and laying on her own side on the bed.

It is an object of the invention to provide disposable diapers which are of the foregoing second type but constructed so that the front area of diaper also has a sufficient liquid absorption capacity.

#### SUMMARY OF THE INVENTION

The object set forth above is achieved, in accordance with the invention, by a disposable diaper having a front area, and back area and a crotch area therebetween, said diaper comprising:

- a liquid-permeable topsheet covering said front, back and crotch areas;

- a liquid-impermeable backsheet covering said front, back and crotch areas;

- a liquid-absorbent core disposed between said topsheet and said backsheet;

- a pair of wing areas laterally extending from opposite sides of said back area so that said diaper is worn by fastening said wing areas to each other, then placing said front area upon said wing areas and fastening said front area to said wing areas, and

- fastening means being provided for fastening said front area to said wing areas;

- wherein said wing areas have a liquid permeability in a thickness direction of said wing areas.

In a preferred embodiment, said wing areas are constructed from a liquid-permeable topsheet, a liquid-permeable backsheet and a liquid-absorbent core between these sheets.

In another preferred embodiment, wherein each of said wing areas comprises a liquid-permeable topsheet and a liquid-permeable backsheet, a liquid absorption capacity per m<sup>2</sup> of said liquid-absorbent core in said front area being adjusted to be higher than those in said back and crotch areas.

According to the invention, although the wearing sequence corresponds to the foregoing second type, i.e., the wing areas are folded on each other and thereafter the front area is folded on these wing areas, the portion of the liquid absorbent core occupying the front area satisfactorily absorbs the quantity of liquid excretions having permeated through said wing areas, since said wing areas are liquid-permeable.

When the wing areas also are provided therein with the liquid absorbent core, liquid excretions are absorbed not only by the portion of the liquid absorbent core occupying said front area but also by the portion of the liquid absorbent core occupying these wing areas.

Consequently, the front area is effectively utilized for absorption of liquid excretions, eliminating the problem of prior art that the insufficient liquid absorption capacity causes the undesirable leakage of liquid excretions. Particularly when the wearer is male or when the wearer is female and laying on her own side on the bed, a sufficient liquid absorption capacity can be assured in the front area.

The invention is based on the previously mentioned



second type of conventional disposable diapers for adult users adapted to be worn folding fastened the wing areas on each other to immobilize a diaper around the waist of the wearer, followed by folding the front area on these wing areas. Therefore, the diaper can be easily and reliably worn with help of the attendant or even by the wearer himself. Furthermore, the attendant can check whether there are excretions or not simply by opening the front area leaving the wing areas fastened to each other so as to prevent the diaper from any displacement from its initial position and, after checking, can rapidly fold the front area back onto the wing areas.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a developed plan view partially broken away of an embodiment of the invention as viewed toward the inner side (upper side) thereof;

Fig. 2 is a view similar to Fig. 1 as viewed toward the outer side (lower side) thereof;

Fig. 3 is a sectional view taken along a line III - III in Fig. 1;

Fig. 4 is a perspective view of such diaper at an intermediate step of its wearing sequence; and

Fig. 5 is a view similar to Fig. 1 of another embodiment of the invention.

## PREFERRED EMBODIMENTS

The invention will be described by way of example in reference with the accompanying drawings.

Referring to Figs 1 through 4, a diaper proper 1 has a front area 2, a crotch area 3, a back area 4, and a pair of wing areas 5 laterally extending from opposite sides of the back area 4. The diaper proper 1 comprises a first liquid-permeable topsheet 6 covering the front area 2, the crotch area 3 and the back area 4, second liquid-permeable topsheets 7 covering the wing areas 5, a first liquid-impermeable backsheet 8 covering the front area 2, the crotch area 3 and the back area 4, second liquid-impermeable backsheets 9 covering the wing areas 5, a first liquid absorbent core 10 sandwiched centrally between the first topsheet 6 and the first backsheet 8 and second liquid absorbent cores 11 sandwiched between the respective second topsheets 7 and the respective second backsheets 9. Each of the second cores 11 is thinner than the first core 10 and may be also integrally with said first core 10 although the second cores 11 are shown as being formed separately of the first core 10. The second topsheets 7 are joined to the first topsheet 6 by respective side sheets 13 and the second backsheets 9 are joined directly to the first backsheet 8, respectively, with use of suitable adhesive or

welding means. The second backsheets 9 are provided with fine perforations 12. Laterally opposite sides of the top- and backsheets 6, 8 and the first core 10 are inwardly curved along the crotch area 3. The first core 10 laterally extends in the back area 4 and defines a substantially T-shape.

On an upper surface of the diaper proper 1, i.e., on an upper surface of the topsheet 6, in a longitudinally central zone thereof, there are provided a pair of elastic narrow sidesheets 13 so as to be opposed to both sides of the front area 2, the crotch area 3 and the back area 4, and outer sides of the respective sidesheets 13 are joined to the upper surface of the topsheet 6. The sidesheets 13 are endowed with their elasticity by elastic members 14 wrapped in inner edge sleeves 13' of the respective sidesheets 13. While the respective sidesheets 13 are shown with inner ends thereof being collapsed outward and joined onto the topsheet 6, it is also possible to collapse said inner ends inward and to join them onto the topsheet 6 or to collapse one end inward and the other end outward and to join them onto the topsheet 6.

The diaper proper 1 is provided with elastic members 15 extending along the opposite edges in the crotch area 3 and with an elastic member 16 extending along the upper edge of the back area 4, both elastic members 15, 16 being

sandwiched between the top- and backsheets 6, 8.

The diaper proper 1 is further provided at four corners in the front area 2 with pressure sensitive tapes 17, respectively, and at an upper corner in one of the wing areas 5 with a pressure sensitive tape 18.

Referring to Fig. 5, another embodiment of the invention having none of the second cores 11 is shown. Remainder of the construction is similar to the previous embodiment. In this embodiment, however, it is also possible to construct each of the wing areas from a single layer of porous sheet. It is preferred in this embodiment that the first core 10 has weight per m<sup>2</sup> heavier in the front area 2 than in the other areas to assure a sufficient liquid absorption capacity.

Obviously, contour of the diaper proper 1 in the front area 2 and the wing areas 5 may be other than those as shown.

Preferably, the first and second topsheets 6, 7 are made of nonwoven fabric, the first backsheet 8 is made of plastic film, the second backsheet 9 is made of open plastic film or open nonwoven fabric, the first and second cores 10, 11 are made of fluffy pulp and super-absorptive polymer particles, and the sidesheets 13 are made of nonwoven fabric. However, particular materials are not critical.

Now a sequence in which a disposable diaper constructed

as has been mentioned according to the invention will be described. The attendant places the back area 4 on the back waist of the wearer, then folds the wing areas 5 on each other so that the one wing area 5 having the tape fastener 18 overlies the other wing area 5 over the belly of the wearer and secures the tape fastener 18 to the other wing area 5. Thereafter the attendant places the crotch area 3 on the crotch of the wearer with the front area 2 being held in hand and places the front area 2 over the belly of the wearer so as to cover the wing areas 5. Finally, the attendant secures the tape fasteners 17 of said front area to said wing areas.

When a diaper of the invention is worn by the wearer him- or herself, the sequence as has been mentioned may be followed by the wearer who is standing up.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A disposable diaper having a front area, and back area and a crotch area therebetween, said diaper comprising:

a liquid-permeable topsheet covering said front, back and crotch areas;

a liquid-impermeable backsheet covering said front, back and crotch areas;

a liquid-absorbent core disposed between said topsheet and said backsheet;

a pair of wing areas laterally extending from opposite sides of said back area so that said diaper is worn by fastening said wing areas to each other, then placing said front area upon said wing areas and fastening said front area to said wing areas, and

fastening means being provided for fastening said front area to said wing areas;

wherein said wing areas have a liquid permeability in a thickness direction of said wing areas.

2. The disposable diaper as recited in Claim 1, wherein each of said wing areas comprises a liquid-permeable topsheet, a liquid-permeable backsheet and a liquid-absorbent core disposed therebetween.

3. The disposable diaper as recited in Claim 1, wherein each of said wing areas comprises a liquid-permeable topsheet and a liquid-permeable backsheet, a liquid absorption capacity per  $m^2$  of said liquid-absorbent core in said front area being adjusted to be higher than those in said back and crotch areas.

FIG. I

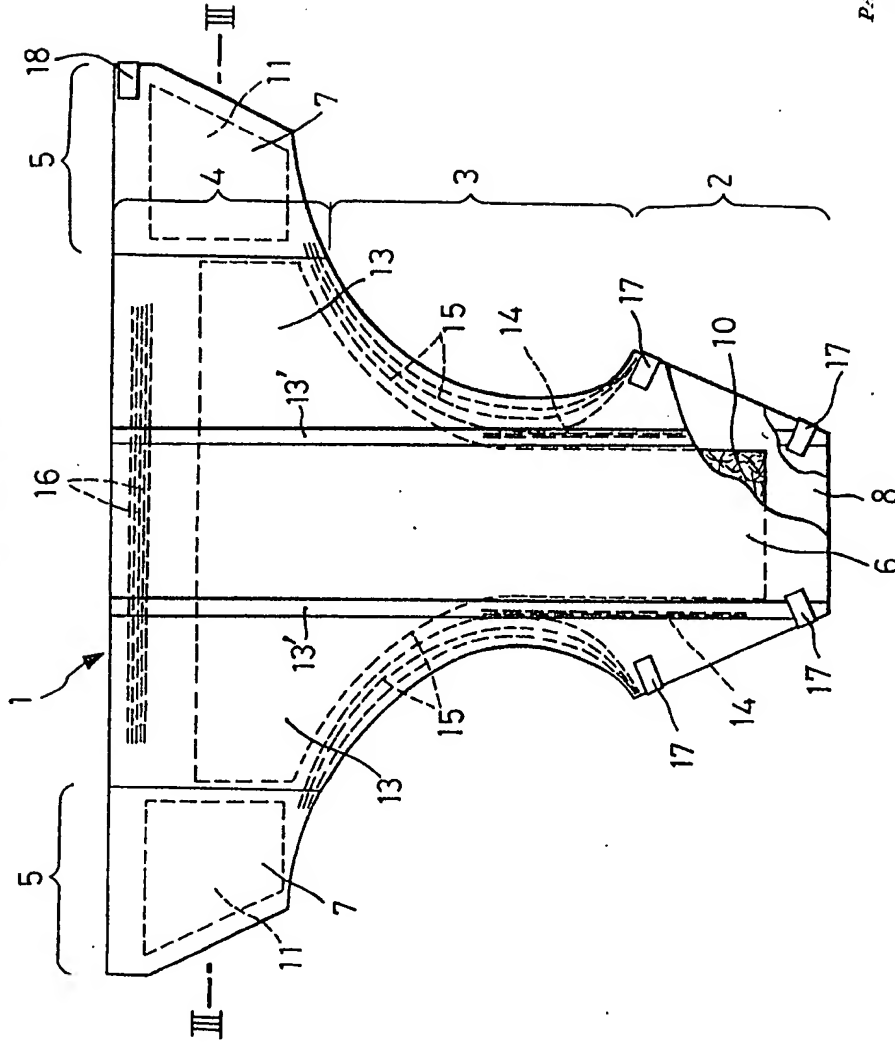
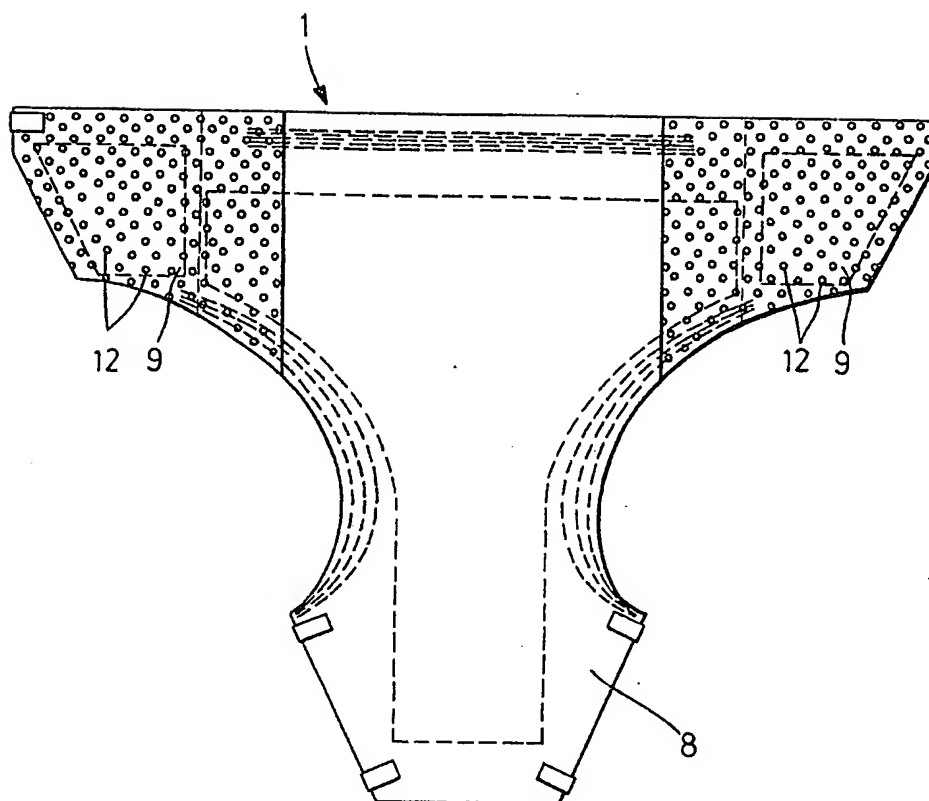


FIG. 2



PATENT AGENTS

*Dwight Ogilvy Renault*



FIG.3

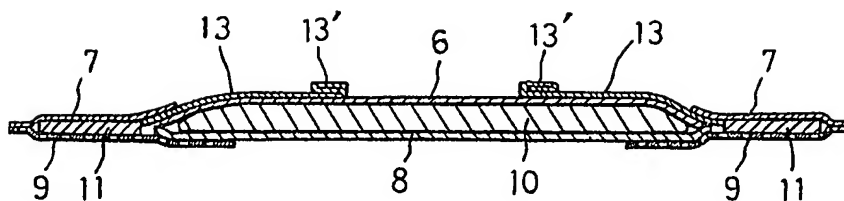
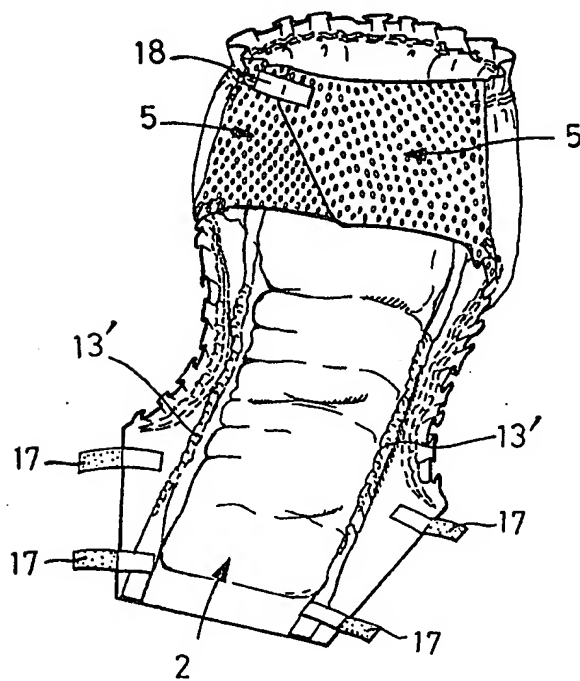


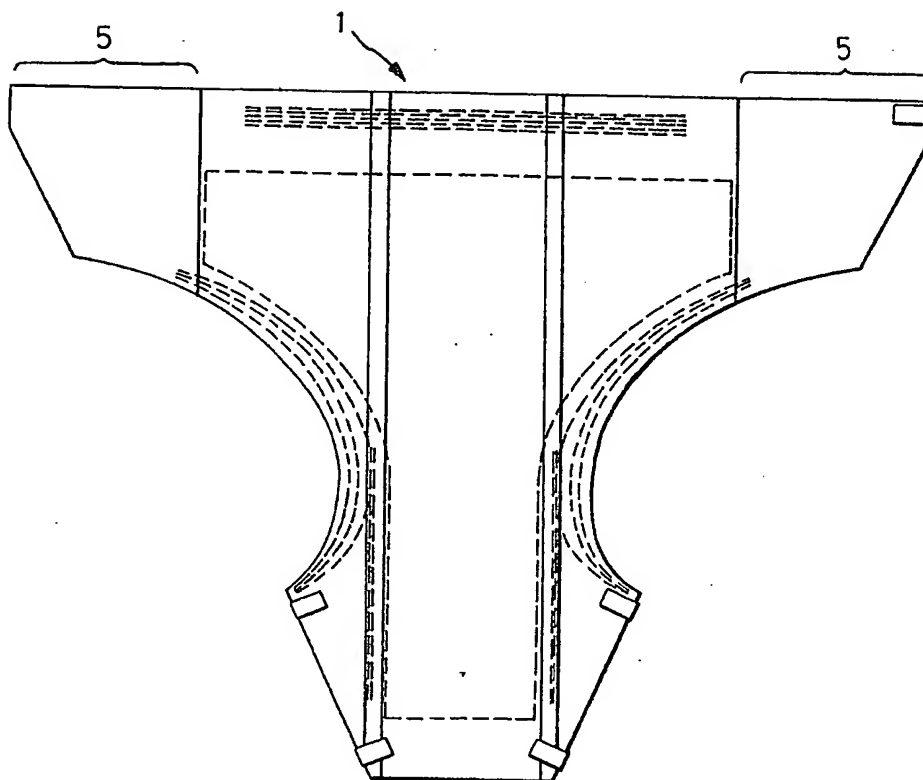
FIG.4



PATENT AGENTS

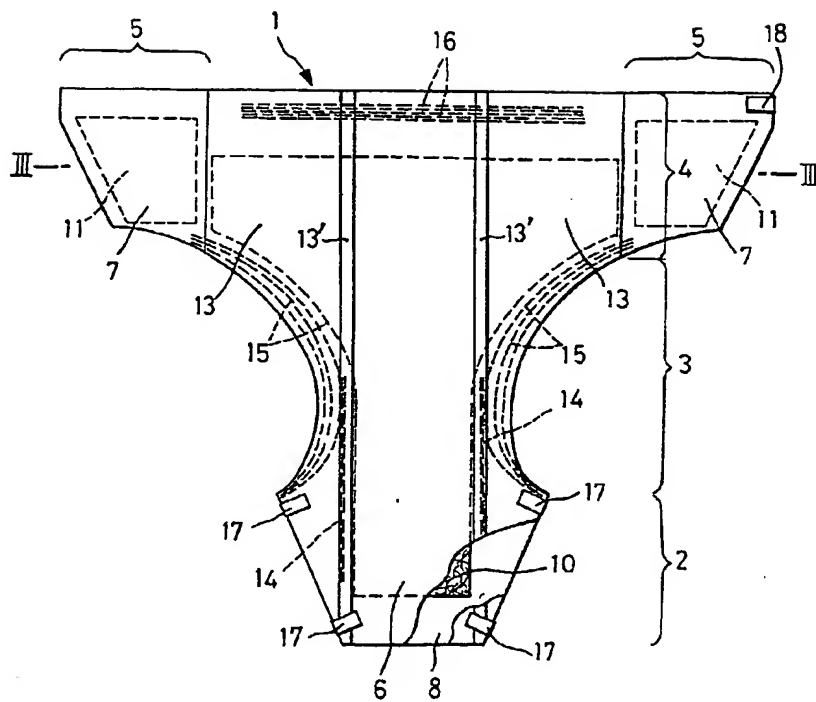
*Swabe & Gilroy, Inc.*

FIG. 5



PATENT AGENTS

*Dwight Ogilvy Renault*



THIS PAGE BLANK (USPTO)